IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appl.No.: 09/668,846
Appellant: Stachurski et al
Filed: September 22, 2000
TC/AU: 2654
Examiner: Lerner

Confirmation No.: 2446

Docket: TI-29491
Cust.No.: 23494

APPELLANTS' BRIEF

Commissioner for Patents
P.O.Box 1450
Alexandria VA 22313-1450

Sir:

The attached sheets contain the Rule 41.37 items of appellants' brief. The Commissioner is hereby authorized to charge the fee for filing a brief in support of the appeal, the fee for an extension of time in which to respond, plus any other necessary fees to the deposit account of Texas Instruments Incorporated, account No. 20-0668. A fee transmittal sheet is enclosed.

Respectfully submitted,

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Rule 41.37(c)(1)(i) Real party of interest

Texas Instruments Incorporated owns the application.

Rule 41.37(c)(1)(ii) Related appeals and interferences

There are no related dispositive appeals or interferences.

Rule 41.37(c)(1)(iii) Status of claims

Claims 1-6 are pending in the application with claims 2 and 4 objected to and claims 1, 3, and 5-6 finally rejected. This appeal involves the finally rejected claims.

Rule 41.37(c)(1)(iv) Status of amendments

There is no amendment after final rejection.

Rule 41.37(c)(1)(v) Summary of claimed subject matter

The invention provides digital speech encoders and decoders in which speech frames are classified as strongly-voiced, weakly-voiced, or unvoiced, and the encoders/decoders are hybrids of parametric coding for the strongly-voiced frames and waveform coding for both the weakly-voiced and unvoiced frames but with pitch prediction for the weakly-voiced frames. Fig. 1d and application page 17, last paragraph through page 18, first two paragraphs summarizes the coding for the three classes of frames; and Figs. 1a-1d show the parametric coding (MELP) for strongly-voiced frames and waveform coding (CELP) for weakly-voiced frames using pitch prediction together with a sparse codebook and CELP also for unvoiced frames but using only a stochastic codebook.

Rule 41.37(c)(1)(vi) Grounds of rejection to be reviewed on appeal

The grounds of rejection to be reviewed on appeal are:

(1) claims 1, 3, and 5-6 were rejected as unpatentable over the Gersho reference in view of the Iyengar reference.

Rule 41.37(c)(1)(vii) Arguments

Claims 1, 3, and 5-6 were rejected as unpatentable over Gersho in view of Iyengar.

With regard to claim 1 (encoder), the Examiner pointed to Gersho Fig.4A for classification of speech frames into three classes (harmonic, unvoiced, and transition) for encoding; and the Examiner asserted that Gersho's transition encoder (column 14, lines 16-20 and Fig.4D) suggests a pitch-prediction filter for the weakly-voiced encoding with pitch-prediction required by clause (d) of claim 1. Iyengar was cited for pitch-prediction filtering with waveform encoding.

Appellants reply that Gersho does not suggest the pitch-prediction filter in weakly-voiced frame encoding as required by claim 1. In particular, the pertinent part of Gersho is the paragraph at column 26, lines 16-37 which describes the transition coder referred to in cited column 14, lines 16-20. Initially, column 26, lines 20-29 state that Gersho's transition encoder uses multipulse coding on the speech signal, and lines 29-31 state that a long-term (i.e., pitch-prediction) filter is not used because pitch-prediction is less important for transition frames. But then lines 31-37 note when prediction gain is high, then maybe a switchble adaptive codebook could be used to help misclassified frames and provide class overlap. In contrast, claim 1 requires all weakly-voiced frames have a pitch prediction filter.

Lastly, Iyengar only classifies frames as voiced or unvoiced (see Fig.1 detector 20) and thus is not relevant for a three-class coder such as Gersho and claim 1. Consequently, the references do not suggest claim 1.

With regard to claim 3, appellants note that claim 3 is the decoder analog of encoder claim 1 and that the rejection of claim 3 is the decoder analog of the rejection of claim 1. Consequently, for claim 3 appellants reply with the decoder analog of the foregoing argument regarding encoder claim 1.

With regard to dependent claims 5 and 6, appellants rely upon the patentability of parent claims 1 and 3.

Rule 41.37(c)(1)(viii) Claims appendix

1. A hybrid speech encoder, comprising:

   (a) a linear prediction, pitch, and voicing analyzer;

   (b) a parametric encoder coupled to said analyzer; and

   (c) a waveform encoder coupled to said analyzer;

   (d) wherein said parametric encoder encodes strongly-voiced frames and said waveform encoder encodes both unvoiced and weakly-voiced frames including a pitch-prediction filter for weakly-voiced frames.

3. A hybrid speech decoder, comprising:

   (a) a linear prediction synthesizer;

   (b) a parametric decoder coupled to said synthesizer; and

   (c) a waveform decoder coupled to said synthesizer;

   (d) wherein said parametric decoder decodes excitations for strongly-voiced frames and said waveform decoder decodes excitations for both unvoiced and weakly-voiced frames including a pitch predictor for weakly-voiced frames.

5. The encoder of claim 1, wherein:

   (a) said analyzer, said parametric encoder, and said waveform encoder are implemented as programs on a programmable processor[.]

6. The decoder of claim 3, wherein:

   (a) said synthesizer, said parametric decoder, and said waveform decoder are implemented as programs on a programmable processor[.]

Rule 41.37(c)(1)(ix) Evidence appendix
n/a

Rule 41.37(c)(1)(x) Related proceedings appendix
n/a